

REMARKS / ARGUMENTS

This application is believed to be in condition for allowance because the claims are believed to be non-obvious and patentable over the cited references. The following paragraphs provide the justification for this belief. In view of the following reasoning for allowance, the Applicant hereby respectfully requests further examination and reconsideration of the subject patent application.

1.0 Rejections of Claims 1-13 and 24-30 under 35 U.S.C. §112, First Paragraph:

In the Office Action of May 9, 2008, claims 1-13 and 24-20 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse these rejections.

In particular, the Office Action suggests that the newly amended claim 1 and 24 include new matter by suggesting:

“...that “said external computing device performing all audio processing of the captured audio signal...”, however, the specification and the drawing as originally filed fail to provide support for this newly added limitation. There is no specific text in the original disclosure as filed that explicitly states that the external computing device performing all audio processing of the captured audio signal calibration in accordance with the parametric information reported to the external computing device. Fig. 3 shows that there is a connection between the interface and the external computing device. However, this cannot constitute the newly added limitation that the external computing device performing all audio signal processing of the captured audio signals in accordance with the parametric information reported to the external computing device. One skilled in the art would also see that pre-amplifiers and the A/D converters also processed the captured audio signal based on the operational characteristic of the microphone array.”

Applicants respectfully suggest that the Office Action has incorrectly characterized the claimed microphone array. In fact, it should be clear that the external computing device **does** perform **all** audio processing of the audio signal captured by the microphone array, as disclosed and claimed by the Applicants.

In particular, in stark contrast to the position advanced by the Office Action, the claimed microphone array **does pass or transmit all audio data captured by the microphone array to an external computing device for all audio processing of that audio data**. For example, paragraph [0048] of the specification (US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed microphone array as follows:

"[0048] Consequently, because the **self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software**, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because **external processing power is used for audio processing**, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing software and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

Clearly, in view of paragraph [0048], the present specification does provide support for the use of external processing of audio data **captured** by the microphone array.

Further, with respect to FIG. 3, the Office Action suggests that based on the connections illustrated in FIG. 3, a person "... skilled in the art would also see that pre-

amplifiers and the A/D converters also processed the captured audio signal based on the operational characteristic of the microphone array."

First, Applicants respectfully suggest that the A/D converters illustrated in FIG. 3 are an ***optional*** component (illustrated by the use of broken lines) that is not claimed in either claim 1 or claim 24. Therefore, this element cannot be considered as contributing to the conclusion that audio signals captured by the microphone are provided to an external computing device for all audio processing.

In particular, paragraph [0065] of the present application states that "...any boxes and interconnections between boxes that are ***represented by broken or dashed lines in either FIG. 3 or FIG. 4 represent alternate embodiments of the self-descriptive microphone array described herein...***" Further, paragraph [0068] of the present application explains that in "...a related embodiment, the array 305 further includes one or more Analog-to-Digital (A/D) converters 335 for digitizing an analog audio input from each microphone (310 through 325)..." Clearly, since the use of A/D converters is optional, and since such use is not claimed, the A/D converters cannot be considered in the present rejection.

Furthermore, with respect to the conclusion advanced in the Office Action that a person "... skilled in the art would also see that ***pre-amplifiers***... also processed the captured audio signal..." it is important to note that claim 1 recites the following limitation:

"wherein ***audio signals captured by the microphone array*** are ***transmitted from the microphone array to the external computing device*** via the array interface, said ***external computing device performing all audio processing of the captured audio signals*** in accordance with the parametric information reported to the external computing device." (emphasis added)

In other words, the "***audio signals captured by the microphone array***" are transmitted to the external computing device which then performs all ***audio processing*** of

the captured audio signal. In particular, inherent in the claimed ***audio capture*** process performed by the microphone array, pressure waves impinge upon the microphones ***included in the microphone array***, which respond by generating electrical signals that are amplified by the pre-amplifiers ***included in the microphone array*** to produce a ***captured audio signal***. Thus, the ***output*** of the microphone array is the **captured audio signal**. The captured audio signal is then transmitted to the external computing device where **all** audio processing of that audio signal is performed.

Further, note that Applicants specifically claim "...***external computing device performing all audio processing of the captured audio signals...***" Thus, the audio processing being claimed is clearly **subsequent to the capture process** performed by the Microphone array, since that audio processing is performed on the ***captured*** audio signal. As noted above, support for this embodiment of the claimed microphone array is provided in paragraph [0048] of the present application. Therefore, the argument advanced by the Office Action that pre-amplification inherent in the audio signal capture process precludes the ability to perform **all** audio processing using an external computing device is without support and must be withdrawn.

Similarly, claim 24 recites the following limitation:

"wherein ***audio signals captured by the microphone array are transmitted from the microphone array to the external computing device*** via the computer interface, said ***external computing device performing all audio processing of the captured audio signals*** in accordance with the parametric information reported to the external computing device." (emphasis added)

Thus, as with claim 1, the audio processing in claim 24 is **subsequent to the capture process** since it is performed on the ***captured*** audio signal. As noted above, support for this embodiment of the claimed microphone array is provided in paragraph [0048] of the present application. Therefore, the argument advanced by the Office Action that pre-amplification inherent in the audio signal capture process precludes the ability to

perform all audio processing using an external computing device is without support and must be withdrawn.

Consequently, it should be clear that there is absolutely no support for the assertion advanced by the Office Action that there “*...is no specific text in the original disclosure as filed that explicitly states that the external computing device performing all audio processing of the captured audio signal calibration in accordance with the parametric information reported to the external computing device...*” In fact, as discussed with respect to paragraph [0048] of the present application, the assertion advanced by the Office Action regarding external processing of audio data described and claimed by the Applicants directly contradicts the specific teachings of the present specification. As such, Applicants respectfully traverse the rejection of claims 1-13 and 24-20 under 35 U.S.C. §112, first paragraph.

2.0 Rejections of Independent Claims 1, 14 and 24 under 35 U.S.C. §102(e):

In the Office Action of May 9, 2008, claims 1, 2, 7, 8, 14-18, 21, 22, 26, 27, 29 and 30 were rejected under 35 U.S.C. §102(e) as being anticipated by *Arndt* (US 6,954,535).

A rejection under 35 USC §102(e) requires that the Applicant's invention was described in patent granted on an application for patent by another filed in the United States before the invention thereof by the Applicant. To establish that a patent describes the Applicant's invention, all of the claimed elements of an Applicant's invention must be considered, especially where they are missing from the prior art. If a claimed element is not taught in the referenced patent, then a rejection under 35 USC §102(e) is not proper, as the Applicant's claimed devices, methods and systems can be shown to be patentably distinct from the cited reference.

In view of the following discussion, the Applicants will show that one or more elements of the Applicants claimed devices, methods, and systems are missing from the

cited art, and that the Applicants claimed devices, methods, and systems are therefore patentable over that cited art.

2.1 Rejection of Claims 1, 2, 7 and 8:

In general, the Office Action rejected independent claim 1 under 35 USC §102(e) based on the rationale that the *Arndt* reference teaches the Applicants' claimed microphone array. However, in view of the following discussion, Applicant will show that the *Arndt* reference does not teach the Applicants claimed microphone array, and that the claimed microphone array is therefore patentable over the cited art.

In particular, the Office Action first suggests that the *Arndt* reference discloses the claimed limitation of "a memory contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array." Specifically, the Office Action suggests that the "memory (21)" of the *Arndt* reference discloses this limitation with respect to col. 4, lines 16-19, of the *Arndt* reference.

Further, in the "*Response to Arguments*" section presented on page 7, the present Office Action advances the argument that:

"...applicant argued that Arndt fails to disclose the claimed memory and the external computing device performs all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device. This is not persuasive. Arndt clearly discloses that the memory (21) stored the filter parameters which define the operational characteristics and configuration of the microphone array. In col. 3, lines 46-50, Arndt discloses that the external computing device (9) processes the captured audio (through 18) in accordance with parametric information..."

First, as previously explained by the Applicants, the claimed microphone array specifically recites the limitation "...a **memory** contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array..."

In contrast, as admitted by the Office Action, "...Arndt clearly discloses that the memory (21) stored the filter parameters..." However, these filter parameters do **not** "...define the operational characteristics and configuration of the microphone array..." as argued by the Office Action. Specifically, the filter parameters described by the **Arndt** reference are computed by the **external** "measuring and evaluation unit 9" and are then transferred to the filters, and may be stored in the memory 21. In particular, col. 3, lines 37-42, of the **Arndt** reference recites the following:

"The measuring and evaluation unit 9 calculates filter parameters from the registered directional diagram. These filter parameters, via the signal path 16, can be transferred to filters 4, 5 that can be parameterized and that are connected downstream with respect to the microphones 2, 3 of the hearing aid 1."

(emphasis added)

Further, col. 4, lines 15-21, of the **Arndt** reference recites the following:

"Moreover, the filter parameters can be stored in an internal storage unit 21 of the hearing aid 1 in the exemplary embodiment. Therefore, a number f sets of filter parameters, for different directional characteristics, can be stored and can be activated if required, for example, for adapting to different hearing situations."

(emphasis added)

In other words, the **Arndt** reference merely provides a teaching wherein particular filter characteristics **for processing captured audio signals** are computed by an external computing device. These filter parameters do **not** define "...parametric information which defines operational characteristics and configuration of the array..." as

claimed. An example of the claimed parametric information is provided in paragraphs [0080] and [0081] of the present application as follows:

"[0080] As noted above, a tested embodiment of the microphone array parametric information 340 is implemented as a lookup table using an EEPROM. An EEPROM or similar rewritable addressable memory is used in this embodiment to allow for updating of the lookup table, either in response to microphone array self-calibration, or in response to user adjustment of lookup table parameters from the external computing device via the microphone array interface."

"[0081] As noted above, this lookup table generally includes one or more of 1) microphone array manufacturer, model, and version; 2) microphone types and position; 3) microphone array working volume (i.e., where the sound source is expected to be); 4) microphone gain calibration (note that nominally identical microphones can have on the order of a +/-4 dB gain difference due to manufacturing variances); and 5) speaker configuration for any speakers included in microphone array. Clearly, additional information may be included in the lookup table if it is available. For example, additional parametric information that may be useful for configuring particular audio processing software includes response functions for the microphones in the array; response functions for any speakers in the array; wave coefficient tables for each microphone or speaker, etc. When available, such information is included in the lookup table, and reported to the external computing device as described above."

In other words, the claimed microphone array includes a memory that specifically includes **operational characteristics and configuration of the microphone array**, nothing more, and nothing less. Further, as claimed, the microphone array is used solely for ***capturing audio signals*** which are then transmitted to an external computing device, separate from the microphone array, in which all processing of audio data is performed. Thus, the "parametric information" must be interpreted to mean "***operational***

characteristics and configuration of the microphone array" which describe audio capture characteristics of the microphone array.

In contrast, the ***Arndt*** reference discloses storage of filter parameters used by filters contained in the hearing aid to ***filter captured audio signals***. These filter parameters do ***not*** define operational parameters of ***Arndt's*** array of microphones (i.e., elements 2 and 3 of the hearing aid). Further, since the Office Action clearly treats the entire hearing aid of the ***Arndt*** reference as a "microphone array" for purposes of rejecting the claims, then it is clear that processing of audio data is performed ***within*** the hearing aid. As such, the ***Arndt*** reference fails to teach "***external computing device performing all audio processing of the captured audio signals***" as claimed. Note that this issue is addressed in further detail below.

Further, in the "***Response to Arguments***" section presented on page 7, the present Office Action advances the argument that:

"...as shown in Fig. 2, the external computing device (9) processes the captured audio signal (through 18) in accordance with the inputs from 17 and 19 which are affected by the filter parameters (in 4 and 5) defining the operational characteristics of the array. As disclosed in col. 1 and col. 3, lines 45-46, ***Arndt's*** invention is to adjust the filter parameters, so the captured audio signal has a response that is closed to the desired ideal directional characteristic. Without inputs from 17 and 19, the external computing device cannot compare the captured audio with the processed audio signals (from 17 and 19) and determine the final filter parameter. The ***signals from 17 and 19 are the result of the signal processing based on the parametric information, so the signals from 17 and 19 include the parametric information defining the operational characteristics and configuration of the array.***" (emphasis added)

In other words, the Office Action argues that the audio signals captured by the microphones of the ***Arndt*** reference are filtered. The Office Action then argues that the

filtered audio signals are provided to an external “measuring and evaluation unit.” Thus, it should be clear that the Office Action admits that the *Arndt* reference discloses providing filtered audio signals to a “measuring and evaluation unit.” The Office Action then makes the **erroneous and unsupported conclusion** that the filter parameters are inherently reported to the “measuring and evaluation unit” of the *Arndt* reference since the filtered audio signal was *processed* “...based on the parametric information.”

However, the claim limitation at issue is not whether filtered audio signals are provided to some other device, but that “a memory contained within the array...” includes “...**parametric information** which **defines operational characteristics and configuration of the array**...” that is “...reported to the external computing device...” Applicants respectfully suggest that sending *filtered audio signals* to a “measuring and evaluation unit,” as disclosed by *Arndt*, fails completely to support a teaching of *reporting* parametric information that **defines operational characteristics and configuration of a microphone array** to an external computing device. There is no equivalence between the two ideas.

Further, it should also be clear that the “measuring and evaluation unit” of the *Arndt* reference does **not** somehow attempt to reconstruct the filter parameters directly from the filtered audio signals. As such, the filter parameters are **not** reported to the “measuring and evaluation unit” by the hearing aid described by the *Arndt* reference. In fact, as previously explained by the Applicants, the “measuring and evaluation unit” of the *Arndt* reference computes and reports the filter parameters to the hearing aid – exactly the **opposite** of the argument advanced by the Office Action. Consequently, Applicants respectfully suggest that the statement regarding transmission of parametric information via the filter outputs of the *Arndt* reference is completely without factual support and is in direct contradiction to the teachings of the Arndt reference.

In particular, as explained above, col. 3, lines 37-42, of the *Arndt* reference teaches that the external computing device (i.e., “measuring and evaluation unit 9”) computes the

filter parameters and transfers them to the filters. Further, as explained in col. 3, lines 62-67 with respect to Figure 2 of the *Arndt* reference:

"For calculating the filter parameters, ***the signals picked up by the microphones 2, 3, are tapped in the signal paths of the microphones 2, 3, preferably after the parameterizable filters 4 and 5, and are supplied to the measuring and evaluation unit 9 via a signal path 17.***" (emphasis added)

In other words, the ***filtered*** audio output from the filters described by the *Arndt* reference is simply transmitted to the external "measuring and evaluation 9". Again, in contrast to the position advanced by the Office Action, transmission of a filtered audio signal to an external computing device as disclosed by the *Arndt* reference is simply ***not*** the same as the claimed limitation regarding reporting "...parametric information... to the external computing device... upon connection of the array to the external computing device..."

Further, it should also be noted that the reporting of the parametric information to the external computing device, as claimed, occurs upon connection of the array to the external computing device. In contrast, the hearing aid of the *Arndt* reference continuously transmits audio signals to the "measuring and evaluation unit 9" during operation of the hearing aid described by *Arndt*. As such the limitation regarding ***when*** parametric information is reported is also not taught by the *Arndt* reference.

With respect to the claimed limitation regarding transmission of the audio signals from the microphone array for processing, the Office Action suggests that Figure 2 of the *Arndt* reference "shows that the signals from microphones are transmitted to external computing device to be processed."

However, as carefully explained in each of the Applicants' prior responses, the specific claim limitation is that ***all*** processing of captured audio signals is performed by the external computing device. Applicants explained the advantages of such an array in

comparison to one in which some of the audio processing is performed on-board (such as by the filters (4, 5) and the "signal processing unit" (6) of the *Arndt* reference which clearly process the captured audio signals before sending them to the "measuring and evaluation unit 9". Further, the Office Action suggested that the in view of the rejection under

In particular, Applicants specifically describe and claim the transmission of "audio signals captured by the microphone array... *from the microphone array to the external computing device...*" which then performs "...*all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device.*"

In contrast, as admitted by the Office Action, the *Arndt* reference discloses processing of audio signals within the hearing aid itself (e.g., filtering of audio signals). Thus, the *Arndt* reference simply does not teach the claimed limitation. Another example of the internal audio processing performed by the *Arndt* reference include the integral "signal processing unit 6" of the hearing aid (see FIG. 2 and col. 3, lines 50-67 of the *Arndt* reference) that processes sound signals recorded by the microphones (2 and 3) for playback via an integral speaker (i.e., "earphone 7"). Clearly, the hearing aid device disclosed by the *Arndt* reference performs *internal* audio processing via both the filters and the integral "signal processing unit 6". As such, the claimed microphone array is not disclosed by the *Arndt* reference.

Further, with respect to the issue of whether the claimed microphone array performs *all* audio processing of *captured audio* using an external computing device, Applicants respectfully suggest that the Office Action has incorrectly characterized the claimed microphone array. In fact, it should be clear that the external computing device *does* perform *all* audio processing of the audio signal captured by the microphone array, as disclosed and claimed by the Applicants.

In particular, as discussed above with respect to the rejections advanced by the Office Action under 35 U.S.C. §112, first paragraph, the claimed microphone array *does*

pass or transmit all audio data captured by the microphone array to an external computing device for all audio processing of the captured audio data. For example, paragraph [0048] of the specification (US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed microphone array as follows:

"[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing software and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

Clearly, in view of paragraph [0048], the present specification does provide support for the use of external processing of **all** audio data **captured** by the microphone array.

Further, with respect to FIG. 3, the Office Action suggests that based on the connections illustrated in FIG. 3, a person "... skilled in the art would also see that pre-amplifiers and the A/D converters also processed the captured audio signal based on the operational characteristic of the microphone array."

First, Applicants respectfully suggest that the A/D converters illustrated in FIG. 3 are an ***optional*** component (illustrated by the use of broken lines) that is not claimed in either claim 1 or claim 24. Therefore, this element cannot be considered as contributing to the

conclusion that audio signals captured by the microphone are provided to an external computing device for all audio processing.

In particular, paragraph [0065] of the present application states that "...any boxes and interconnections between boxes that are **represented by broken or dashed lines in either FIG. 3 or FIG. 4 represent alternate embodiments of the self-descriptive microphone array described herein...**" Further, paragraph [0068] of the present application explains that in "...a **related embodiment**, the array 305 **further includes** one or more Analog-to-Digital (A/D) converters 335 for digitizing an analog audio input from each microphone (310 through 325..." Clearly, since the use of A/D converters is optional, and since such use is not claimed, the A/D converters cannot be considered in the present rejection.

Furthermore, with respect to the conclusion advanced in the Office Action that a person "... skilled in the art would also see that **pre-amplifiers**... also processed the captured audio signal..." it is important to note that claim 1 recites the following limitation:

"wherein **audio signals captured by the microphone array** are **transmitted from the microphone array to the external computing device** via the array interface, said **external computing device performing all audio processing of the captured audio signals** in accordance with the parametric information reported to the external computing device." (emphasis added)

In other words, the "**audio signals captured by the microphone array**" are transmitted to the external computing device which then performs all **audio processing** of the captured audio signal. In particular, inherent in the claimed **audio capture** process performed by the microphone array, pressure waves impinge upon the microphones **included in the microphone array**, which respond by generating electrical signals that are amplified by the pre-amplifiers **included in the microphone array** to produce a **captured audio signal**. Thus, the **output** of the microphone array is the **captured audio**

signal. The captured audio signal is then transmitted to the external computing device where all audio processing of that audio signal is performed.

Further, note that Applicants specifically claim “...**external computing device performing all audio processing of the captured audio signals...**” Thus, the audio processing being claimed is clearly subsequent to the capture process performed by the Microphone array, since that audio processing is performed on the **captured** audio signal. As noted above, support for this embodiment of the claimed microphone array is provided in paragraph [0048] of the present application. Therefore, the argument advanced by the Office Action that pre-amplification inherent in the audio signal capture process precludes the ability to perform all audio processing using an external computing device is without support and must be withdrawn.

Therefore, in view of the preceding discussion, it is clear that independent claim 1 has elements not disclosed in the **Arndt** reference. Consequently, the rejection of claim 1 under 35 USC §102(e) is not proper. Therefore, Applicants respectfully traverse the rejection of claims 1, 2, 7 and 8 under 35 USC §102(e) in view of the language of claim 1. In particular, claim 1 recites the following novel language:

“A microphone array, comprising:

an array of at least one microphone;

a memory contained within the array, said **memory including parametric information which defines operational characteristics and configuration of the array**;

an array interface for connecting the array to an external computing device;

wherein the **parametric information included in the memory is reported to the external computing device** via the array interface upon connection of the array to the external computing device; and

wherein **audio signals captured by the microphone array are transmitted from the microphone array to the external computing device** via the array interface, said **external computing device performing all audio processing of**

the captured audio signals in accordance with the parametric information reported to the external computing device.” (emphasis added)

2.2 Rejection of Claims 14-18, 21 and 22:

In general, the Office Action rejected independent claim 14 under 35 USC §102(e) based on the rationale that the *Arndt* reference teaches the Applicants' claimed method for "...automatically adapting audio processing software for optimally processing audio signals captured by a microphone array..." However, in view of the following discussion, Applicant will show that the *Arndt* reference does not teach the Applicants claimed method, and that the claimed method is therefore patentable over the cited art.

Further, it should also be noted that the present Office Action appears to address only the limitations of independent claim 1 while simply listing independent claim 14 in the preamble of the discussion regarding the rejection of claim 1. Claim 14 includes limitations that differ from those of claim 1. As such, Applicants respectfully suggest that the limitations of independent claim 14 have *not* been fully examined. Therefore, Applicants believe that the rejection of claim 14 is not supported and must be withdrawn. However, in the "Response to Arguments" section presented on pages 8 and 9 of the present Final Office Action, several, but not all, of the arguments advanced by the Applicants for the patentability of claim 14 were addressed. As such, Applicants again believe that the rejection of claim 14 is not supported and must be withdrawn since *no full rejection of all of the elements of claim 14 has yet been presented in any Office Action.*

However, for purposes of completeness, Applicants first address several of the arguments presented by the Office Action in the "Response to Arguments" section regarding the patentability of claim 14. Applicants will then address the specific arguments presented by the Office Action with respect to independent claim 1 as they may or may not apply to independent claim 14.

In particular, on page 8 of the "Response to Arguments" section of the Final Office Action, first addressed Applicants arguments with respect to claim 14, by suggesting the following:

"...applicant argued that Arndt fails to disclose the microphone array automatically determines the current configuration upon being coupled to the external computing device via the computer interface and the microphone array automatically reports the current configuration to the external computing device via the computer interface after the microphone array automatically determines the current configuration. This is not convincing. Arndt clearly discloses that the current configuration is determined by the filters (4, 5). This is done automatically without any human intervention. Arndt also discloses that the invention is to adjust the microphone configuration, so the response is close to the idea response (col. 3, lines 44-46). The signals 17 and 19 provide the external computing device the current configuration of the microphone array because signals 17 and 19 are defined by filters (4, 5). The filters (4, 5) define the current configuration. Any new configuration (defined by the filter coefficients) will be transferred to the memory after the external computing device made the calculation. **The claim never specifies that the current configuration is directly transferred to the external computing device via the memory.**" (emphasis added)

Applicants respectfully suggest that the above quoted argument mischaracterizes both the claimed method and the cited **Arndt** reference.

Specifically, the Office Action first states that "...Arndt clearly discloses that the current configuration is determined by the filters (4, 5)..." The filters of the **Arndt** reference do nothing except receive filter parameters and filter audio signals (see for example col. 3, lines 37-42, and FIG. 2 of the **Arndt** reference). As such, the **Arndt** reference does not disclose that "...the microphone array automatically determines the current configuration upon being coupled to the external computing device..." as claimed. In fact, the hearing aid of the **Arndt** reference **never** determines any self configuration

whatsoever. The described hearing aid simply receives filter parameters, sets the filters to use those parameters, and processes incoming audio data using those filters.

Further, as shown in the above-quoted text, the Office Action also advances the argument that "...signals 17 and 19 provide the external computing device the current configuration of the microphone array because signals 17 and 19 are defined by filters (4, 5)..."

Clearly, this argument has no support whatsoever in the *Arndt* reference. In particular, the Office Action argues that the **audio signals** captured by the microphones of the *Arndt* reference are filtered "...by filters (4, 5)..." to produce filtered audio "...signals 17 and 19..." The Office Action then argues that the filtered audio signals are provided to the external "measuring and evaluation unit" described by the *Arndt* reference. Thus, it should be clear that the Office Action admits that the *Arndt* reference discloses providing filtered audio signals to a "measuring and evaluation unit." The Office Action then makes the **erroneous and unsupported conclusion** that the filter parameters are inherently reported to the "measuring and evaluation unit" of the *Arndt* reference since the filtered audio signal was **processed** "...based on the parametric information."

However, the claim limitations at issue are not that filtered audio signals are provided to some other device, but that the microphone array automatically determines the current configuration upon being coupled to the external computing device via the computer interface and that the microphone array then automatically reports the current configuration to the external computing device. Applicants respectfully suggest that sending **filtered audio signals** to a "measuring and evaluation unit," as disclosed by *Arndt*, fails completely to support a teaching of **reporting the current configuration of the microphone array** to an external computing device, **after the microphone array automatically determines that configuration itself**. There is no equivalence between the two ideas.

Further, it should also be clear that the "measuring and evaluation unit" of the *Arndt* reference does **not** somehow attempt to reconstruct the filter parameters directly from the filtered audio signals. As such, the filter parameters are **not** reported to the "measuring and evaluation unit" by the hearing aid described by the *Arndt* reference. In fact, as previously explained by the Applicants, the "measuring and evaluation unit" of the *Arndt* reference computes and reports the filter parameters to the hearing aid – exactly the **opposite** of the argument advanced by the Office Action. Consequently, Applicants respectfully suggest that the statement regarding transmission of configuration information via the filter outputs of the *Arndt* reference is completely without factual support and is in direct contradiction to the teachings of the Arndt reference.

With respect to the arguments advanced with respect to claim 1 (where claim 14 was only listed in the preamble, without any direct treatment), the Office Action first suggests that the *Arndt* reference discloses "a memory (21) contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array." Specifically, the Office Action suggests that the "memory (21)" of the *Arndt* reference discloses this limitation with respect to col. 4, lines 16-19, of the *Arndt* reference.

However, col. 4, lines 16-19, of the *Arndt* reference specifically explains that the memory (i.e., the "internal storage unit 21") merely includes different sets of filter parameters that can be activated for "adapting to different hearing situations..." Further, it is also clear that the filter parameters described by the *Arndt* reference are computed by the **external** "measuring and evaluation unit 9" and are then transferred to the filters, and may be stored in the memory 21. In particular, col. 3, lines 37-42, of the *Arndt* reference recites the following:

"The measuring and evaluation unit 9 calculates filter parameters from the registered directional diagram. These filter parameters, via the signal path 16, can be transferred to filters 4, 5 that can be parameterized and that are

connected downstream with respect to the microphones 2, 3 of the hearing aid 1.”
(emphasis added)

Further, col. 4, lines 15-21, of the **Arndt** reference recites the following:

“Moreover, the filter parameters can be stored in an internal storage unit 21 of the hearing aid 1 in the exemplary embodiment. Therefore, a number f sets of filter parameters, for different directional characteristics, can be stored and can be activated if required, for example, for adapting to different hearing situations.”
(emphasis added)

In other words, the **Arndt** reference merely provides a teaching wherein particular filter characteristics **for processing captured audio signals** are computed by an external computing device. The **Arndt** reference then discloses that these externally computed filter characteristics can be stored in an internal memory of the “hearing aid” described by the **Arndt** reference.

In stark contrast, the Applicants do not specifically claim a “memory” that contains parametric information. Instead, Applicants specifically recite limitations wherein “...the **microphone array automatically determines the current configuration upon being coupled to the external computing device** via the computer interface...” Further, Applicants specifically claim that “...the microphone array **automatically reports the current configuration to the external computing device** via the computer interface **after the microphone array automatically determines the current configuration.**”

Neither of these two limitations is specifically addressed by the current rejections. However, in rejecting claim 1, the Office Action does state that the “**parametric information stored in the memory** is being **reported to the external computing device through the filter outputs.**” However, Applicants respectfully suggest that this statement regarding transmission of parametric information via the filter outputs is completely without factual support and is in direct contradiction to the teachings of the **Arndt** reference.

In particular, as explained above, col. 3, lines 37-42, of the *Arndt* reference teaches that the external computing device (i.e., “measuring and evaluation 9”) computes the filter parameters and transfers them to the filters. Further, as explained in col. 3, lines 62-67 with respect to Figure 2 of the *Arndt* reference:

“For calculating the filter parameters, ***the signals picked up by the microphones 2, 3, are tapped in the signal paths of the microphones 2, 3, preferably after the parameterizable filters 4 and 5, and are supplied to the measuring and evaluation unit 9 via a signal path 17.***” (emphasis added)

In other words, the ***filtered*** audio output from the filters described by the *Arndt* reference is simply transmitted to the external “measuring and evaluation 9”.

Clearly, in contrast to the position advanced by the Office Action, transmission of a filtered audio output to an external computing device as disclosed by the *Arndt* reference is simply ***not*** the same as the claimed limitations regarding automatically determining “...the current configuration upon being coupled to the external computing device...” and automatically reporting “...the current configuration to the external computing device...”

Finally, with respect to transmission of the audio signals from the microphone array to an external computing device for processing, in rejecting claim 1, the Office Action suggests that Figure 2 of the *Arndt* reference “shows that the signals from microphones are transmitted to external computing device to be processed.”

However, as carefully explained in the Applicants prior response, claim 14 specifically recites limitations wherein audio processing software in an external computing device is automatically configured based on configuration information transmitted from the array to the external computing device. Then, that audio processing software in the external computing device is used to process the audio signals

captured by the microphone array. Specifically, claim 14 recites the following limitations with respect to this issue:

“...automatically configure audio processing software operating within an external computing device to reflect a current configuration of a microphone array;
said automatically configured audio processing software being used for processing audio signals captured by the microphone array...”

Clearly, these elements provide advantages not disclosed or in any way anticipated by the cited *Arndt* reference. In fact, it should be noted that as discussed above, the filters described by the *Arndt* reference are configured in response to parameters sent by the measuring and evaluation unit into the hearing aid – exactly the *opposite* of what is argued by the Office Action.

In particular, the claimed method makes use of an external computing device for processing audio signals using automatically configured audio processing software in the external computing device that is configured based on configuration information sent by the microphone array to the external computing device.

In contrast, the *Arndt* reference discloses a “hearing aid” which includes an *internal* “signal processing unit 6” (see FIG. 2 and col. 3, lines 50-67 of the *Arndt* reference) that processes sound signals recorded by the microphones (2 and 3) for playback via integral an integral speaker (i.e., “earphone 7”), following filtering by the filters (4, 5) which are set using parameters sent by the measuring and evaluation unit (9) into the hearing aid. As such, the claimed method is not disclosed by the *Arndt* reference.

Therefore, in view of the preceding discussion, it is clear that independent claim 14 has elements not disclosed in the *Arndt* reference. Consequently, the rejection of claim 14 under 35 USC §102(e) is not proper. Therefore, Applicants respectfully traverse

rejection of claims 14-18, 21 and 22 under 35 USC §102(e) in view of the language of claim 14. In particular, claim 14 recites the following novel language:

"A method for automatically adapting audio processing software for optimally processing audio signals captured by a microphone array, comprising using a computing device to:

automatically configure audio processing software operating within an external computing device to reflect a current configuration of a microphone array;

said automatically configured audio processing software being used for processing audio signals captured by the microphone array;

said microphone array including at least one microphone, and said microphone array being coupled to the external computing device via any of a wired and a wireless computer interface;

wherein the microphone array automatically determines the current configuration upon being coupled to the external computing device via the computer interface; and

wherein the microphone array automatically reports the current configuration to the external computing device via the computer interface after the microphone array automatically determines the current configuration."

(emphasis added)

2.3 Rejection of Claims 24, 26, 27, 29 and 30:

In general, the Office Action rejected independent claim 24 under 35 USC §102(e) based on the rationale that the *Arndt* reference teaches the Applicants' claimed system for "...automatically providing device configuration information of a microphone array to an external computing device..." However, in view of the following discussion, Applicant will show that the *Arndt* reference does not teach the Applicants claimed system, and that the claimed system is therefore patentable over the cited art.

In particular, the Office Action first suggests that the *Arndt* reference discloses "a memory contained within the array, said memory including parametric information which defines operational characteristics and configuration of the array." Specifically, the Office Action suggests that the "memory (21)" of the *Arndt* reference discloses this limitation with respect to col. 4, lines 16-19, of the *Arndt* reference.

Further, in the "*Response to Arguments*" section presented on page 7, the present Office Action advances the argument that:

"...applicant argued that Arndt fails to disclose the claimed memory and the external computing device performs all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device. This is not persuasive. Arndt clearly discloses that the memory (21) stored the filter parameters which define the operational characteristics and configuration of the microphone array. In col. 3, lines 46-50, Arndt discloses that the external computing device (9) processes the captured audio (through 18) in accordance with parametric information..."

First, as previously explained by the Applicants, the claimed system specifically recites the limitation "...at least one **addressable memory**, said addressable memory storing parametric information **detailing device configuration information** of the microphone array..."

In contrast, as admitted by the Office Action, "...Arndt clearly discloses that the memory (21) stored the filter parameters..." However, these filter parameters do **not** "...define the operational characteristics and configuration of the microphone array..." as argued by the Office Action. Specifically, the filter parameters described by the *Arndt* reference are computed by the **external** "measuring and evaluation unit 9" and are then transferred to the filters, and may be stored in the memory 21. In particular, col. 3, lines 37-42, of the *Arndt* reference recites the following:

"The measuring and evaluation unit 9 calculates filter parameters from the registered directional diagram. These filter parameters, via the signal path 16, can be transferred to filters 4, 5 that can be parameterized and that are connected downstream with respect to the microphones 2, 3 of the hearing aid 1."

(emphasis added)

Further, col. 4, lines 15-21, of the **Arndt** reference recites the following:

"Moreover, the filter parameters can be stored in an internal storage unit 21 of the hearing aid 1 in the exemplary embodiment. Therefore, a number f sets of filter parameters, for different directional characteristics, can be stored and can be activated if required, for example, for adapting to different hearing situations."

(emphasis added)

In other words, the **Arndt** reference merely provides a teaching wherein particular filter characteristics for processing captured audio signals are computed by an external computing device. These filter parameters do not define "...parametric information which defines operational characteristics and configuration of the array..." as claimed. An example of the claimed parametric information is provided in paragraphs [0080] and [0081] of the present application as follows:

"[0080] As noted above, a tested embodiment of the microphone array parametric information 340 is implemented as a lookup table using an EEPROM. An EEPROM or similar rewritable addressable memory is used in this embodiment to allow for updating of the lookup table, either in response to microphone array self-calibration, or in response to user adjustment of lookup table parameters from the external computing device via the microphone array interface."

"[0081] As noted above, this lookup table generally includes one or more of 1) microphone array manufacturer, model, and version; 2) microphone types and position; 3) microphone array working volume (i.e., where the sound source is

expected to be); 4) microphone gain calibration (note that nominally identical microphones can have on the order of a +/-4 dB gain difference due to manufacturing variances); and 5) speaker configuration for any speakers included in microphone array. Clearly, additional information may be included in the lookup table if it is available. For example, additional parametric information that may be useful for configuring particular audio processing software includes response functions for the microphones in the array; response functions for any speakers in the array; wave coefficient tables for each microphone or speaker, etc. When available, such information is included in the lookup table, and reported to the external computing device as described above.”

In other words, the claimed system includes a memory that specifically includes ***parametric information detailing device configuration information of the microphone array, nothing more***, and nothing less. Further, as claimed, the microphone array is used for ***capturing audio signals*** which are then transmitted to an external computing device, separate from the microphone array, in which all processing of audio data is performed. Thus, the “parametric information” must be interpreted to mean ***“device configuration information of the microphone array”*** which describes audio capture characteristics of the microphone array.

In contrast, the ***Arndt*** reference discloses storage of filter parameters used by filters contained in the hearing aid to ***filter captured audio signals***. These filter parameters do ***not*** define operational parameters of ***Arndt's*** array of microphones (i.e., elements 2 and 3 of the hearing aid). Further, since the Office Action clearly treats the entire hearing aid of the ***Arndt*** reference as a “microphone array” for purposes of rejecting the claims, then it is clear that processing of audio data is performed ***within*** the hearing aid. As such, the ***Arndt*** reference fails to teach ***“external computing device performing all audio processing of the captured audio signals”*** as claimed. Note that this issue is addressed in further detail below.

Further, in the *"Response to Arguments"* section presented on page 7, the present Office Action advances the argument that:

*"...as shown in Fig. 2, the **external computing device (9) processes the captured audio signal** (through 18) **in accordance with the inputs from 17 and 19 which are affected by the filter parameters** (in 4 and 5) defining the operational characteristics of the array. As disclosed in col. 1 and col. 3, lines 45-46, Arndt's invention is to adjust the filter parameters, so the captured audio signal has a response that is closed to the desired ideal directional characteristic. Without inputs from 17 and 19, the external computing device cannot compare the captured audio with the processed audio signals (from 17 and 19) and determine the final filter parameter. The **signals from 17 and 19 are the result of the signal processing based on the parametric information, so the signals from 17 and 19 include the parametric information defining the operational characteristics and configuration of the array.**" (emphasis added)*

In other words, the Office Action argues that the audio signals captured by the microphones of the *Arndt* reference are filtered. The Office Action then argues that the filtered audio signals are provided to an external "measuring and evaluation unit." Thus, it should be clear that the Office Action admits that the *Arndt* reference discloses providing filtered audio signals to a "measuring and evaluation unit." The Office Action then makes the *erroneous and unsupported conclusion* that the filter parameters are inherently reported to the "measuring and evaluation unit" of the *Arndt* reference since the filtered audio signal was *processed "...based on the parametric information."*

However, the claim limitation at issue is not whether filtered audio signals are provided to some other device, but that an "... addressable memory storing parametric information detailing device configuration information of the microphone array..." wherein the microphone array "... reports the parametric information to the external computing device via a computer interface..." Applicants respectfully suggest that sending *filtered audio signals* to a "measuring and evaluation unit," as disclosed by *Arndt, fails*

completely to support a teaching of *reporting* parametric information that **defines operational characteristics and configuration of a microphone array** to an external computing device. There is no equivalence between the two ideas.

Further, it should also be clear that the "measuring and evaluation unit" of the *Arndt* reference does *not* somehow attempt to reconstruct the filter parameters directly from the filtered audio signals. As such, the filter parameters are *not* reported to the "measuring and evaluation unit" by the hearing aid described by the *Arndt* reference. In fact, as previously explained by the Applicants, the "measuring and evaluation unit" of the *Arndt* reference computes and reports the filter parameters to the hearing aid – exactly the **opposite** of the argument advanced by the Office Action. Consequently, Applicants respectfully suggest that the statement regarding transmission of parametric information via the filter outputs of the *Arndt* reference is completely without factual support and is in direct contradiction to the teachings of the Arndt reference.

In particular, as explained above, col. 3, lines 37-42, of the *Arndt* reference teaches that the external computing device (i.e., "measuring and evaluation unit 9") computes the filter parameters and transfers them to the filters. Further, as explained in col. 3, lines 62-67 with respect to Figure 2 of the *Arndt* reference:

"For calculating the filter parameters, ***the signals picked up by the microphones 2, 3, are tapped in the signal paths of the microphones 2, 3, preferably after the parameterizable filters 4 and 5, and are supplied to the measuring and evaluation unit 9 via a signal path 17.***" (emphasis added)

In other words, the *filtered* audio output from the filters described by the *Arndt* reference is simply transmitted to the external "measuring and evaluation 9". Again, in contrast to the position advanced by the Office Action, transmission of a filtered audio signal to an external computing device as disclosed by the *Arndt* reference is simply *not* the same as the claimed limitation regarding a microphone array including an

addressable memory that stores parametric information that is automatically reported to the external computing device.

Further, in the “*Response to Arguments*” section presented on page 10, the present Office Action advances the argument that:

“...applicant argued that the current invention includes a memory and the microphone array automatically reads the parametric information from the memory and reports the parametric information to the external computing device and Arndt fails to show that. In view of the entire disclosure, Arndt does not teach that the memory has to store multiple set of parametric information. Arndt merely suggests that multiple sets could be stored. Furthermore, the hearing aid disclosed in Arndt is an automatic device. Once the device is being turn on, it will automatically set the hearing aid to a current configuration based on the parametric information from the memory. This parametric information is also being transferred to the external computing device through 17 and 19.” (emphasis added)

First, as noted above, and as admitted by the Office Action in the above quoted argument, the hearing aid disclosed by the **Arndt** reference is an automatic device. “Once the device is being turn on, it will automatically set the hearing aid to a current configuration based on the parametric information from the memory.” However, as discussed above, only configuration performed by the hearing aid is to set the filters to the parameters provided by the external “measuring and evaluation unit.” In other words, parameters are sent *into* the hearing aid from an external device instead of being sent *from* the hearing aid to an external device.

Further, in contrast to the argument that “...parametric information is also being transferred to the external computing device through 17 and 19...,” Applicants have previously explained that the filtered audio signals provided from the hearing aid to the “measuring and evaluation unit” via lines 17 and 19 is simply not parametric information. In fact, the only data sent via lines 17 and 19 are filtered audio signals.

With respect to the claimed limitation regarding transmission of the audio signals from the microphone array for processing, the Office Action suggests that Figure 2 of the **Arndt** reference "shows that the signals from microphones are transmitted to external computing device to be processed."

However, as carefully explained in each of the Applicants' prior responses, the specific claim limitation is that all processing of captured audio signals is performed by the external computing device. Applicants explained the advantages of such an array in comparison to one in which some of the audio processing is performed on-board (such as by the filters (4, 5) and the "signal processing unit" (6) of the **Arndt** reference which clearly process the captured audio signals before sending them to the "measuring and evaluation unit 9". Further, the Office Action suggested that the in view of the rejection under

In particular, Applicants specifically describe and claim that "...audio signals captured by the microphone array are transmitted from the microphone array to the external computing device via the computer interface..." and that the "...external computing device..." then performs "...all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device."

In contrast, as admitted by the Office Action, the **Arndt** reference discloses processing of audio signals within the hearing aid itself (e.g., filtering of audio signals). Thus, the **Arndt** reference simply does not teach the claimed limitation. Another example of the internal audio processing performed by the **Arndt** reference include the integral "signal processing unit 6" of the hearing air (see FIG. 2 and col. 3, lines 50-67 of the **Arndt** reference) that processes sound signals recorded by the microphones (2 and 3) for playback via an integral speaker (i.e., "earphone 7"). Clearly, the hearing aid device disclosed by the **Arndt** reference performs **internal** audio processing via both the filters and the integral "signal processing unit 6". As such, the claimed microphone array is not disclosed by the **Arndt** reference.

Further, with respect to the issue of whether the claimed microphone array performs ***all*** audio processing of ***captured audio*** using an external computing device, Applicants respectfully suggest that the Office Action has incorrectly characterized the claimed microphone array. In fact, it should be clear that the external computing device ***does*** perform ***all*** audio processing of the audio signal captured by the microphone array, as disclosed and claimed by the Applicants.

In particular, as discussed above with respect to the rejections advanced by the Office Action under 35 U.S.C. §112, first paragraph, the claimed microphone array ***does pass or transmit all audio data captured by the microphone array to an external computing device for all audio processing of the captured audio data***. For example, paragraph [0048] of the specification (US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed microphone array as follows:

"[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing software and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

Clearly, in view of paragraph [0048], the present specification does provide support for the use of external processing of ***all*** audio data ***captured*** by the microphone array.

Further, with respect to FIG. 3, the Office Action suggests that based on the connections illustrated in FIG. 3, a person "... skilled in the art would also see that pre-amplifiers and the A/D converters also processed the captured audio signal based on the operational characteristic of the microphone array."

First, Applicants respectfully suggest that the A/D converters illustrated in FIG. 3 are an ***optional*** component (illustrated by the use of broken lines) that is not claimed in either claim 1 or claim 24. Therefore, this element cannot be considered as contributing to the conclusion that audio signals captured by the microphone are provided to an external computing device for all audio processing.

In particular, paragraph [0065] of the present application states that "...any boxes and interconnections between boxes that are ***represented by broken or dashed lines in either FIG. 3 or FIG. 4 represent alternate embodiments of the self-descriptive microphone array described herein...***" Further, paragraph [0068] of the present application explains that in "...a ***related embodiment***, the array 305 ***further includes*** one or more Analog-to-Digital (A/D) converters 335 for digitizing an analog audio input from each microphone (310 through 325)..." Clearly, since the use of A/D converters is optional, and since such use is not claimed, the A/D converters cannot be considered in the present rejection.

Furthermore, with respect to the conclusion advanced in the Office Action that a person "... skilled in the art would also see that ***pre-amplifiers***... also processed the captured audio signal..." it is important to note that claim 1 recites the following limitation:

"wherein ***audio signals captured by the microphone array*** are ***transmitted from the microphone array to the external computing device*** via the computer interface, said ***external computing device*** performing ***all audio processing of the captured audio signals*** in accordance with the parametric information reported to the external computing device." (emphasis added)

In other words, the ***audio signals captured by the microphone array*** are transmitted to the external computing device which then performs all ***audio processing*** of the captured audio signal. In particular, inherent in the claimed ***audio capture*** process performed by the microphone array, pressure waves impinge upon the microphones ***included in the microphone array***, which respond by generating electrical signals that are amplified by the pre-amplifiers ***included in the microphone array*** to produce a ***captured audio signal***. Thus, the ***output*** of the microphone array is the ***captured audio signal***. The captured audio signal is then transmitted to the external computing device where ***all*** audio processing of that audio signal is performed.

Further, note that Applicants specifically claim “...***external computing device performing all audio processing of the captured audio signals***...” Thus, the audio processing being claimed is clearly ***subsequent to the capture process*** performed by the Microphone array, since that audio processing is performed on the ***captured*** audio signal. As noted above, support for this embodiment of the claimed microphone array is provided in paragraph [0048] of the present application. Therefore, the argument advanced by the Office Action that pre-amplification inherent in the audio signal capture process precludes the ability to perform ***all*** audio processing using an external computing device is without support and must be withdrawn.

Therefore, in view of the preceding discussion, it is clear that independent claim 24 has elements not disclosed in the ***Arndt*** reference. Consequently, the rejection of claim 24 under 35 USC §102(e) is not proper. Therefore, Applicants respectfully traverse the rejection of claim 24, 26, 27, 29 and 30, under 35 USC §102(e) in view of the language of claim 24. In particular, claim 24 recites the following novel language:

“A system for automatically ***providing device configuration information of a microphone array to an external computing device***, comprising:

a microphone array including at least one microphone, each microphone having a predetermined position in a three-dimensional space relative to the microphone array;

said microphone array further including at least one addressable memory, said addressable memory storing parametric information detailing device configuration information of the microphone array;

wherein the microphone array automatically reads the parametric information from the addressable memory and ***reports the parametric information to the external computing device*** via a computer interface, said external computing device being remotely coupled to the microphone array via the computer interface; and

wherein ***audio signals captured by the microphone array are transmitted from the microphone array to the external computing device*** via the computer interface, said ***external computing device performing all audio processing of the captured audio signals in accordance with the parametric information*** reported to the external computing device.” (emphasis added)

3.0 Rejections under 35 U.S.C. §103(a):

The Office Action rejected dependent claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 under 35 U.S.C. §103(a) based on the rationale that the ***Arndt*** reference discloses the Applicants claimed devices, systems and methods when combined with various additional references. However, as discussed above in Sections 2.1 through 2.3, the parent claims (i.e., claims 1, 14 and 24) of dependent claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 have been shown to be allowable in view of the cited ***Arndt*** reference. Therefore, the use of additional references in an attempt to address particular features of various dependent claims fails to show a *prima facie* case of obviousness as required under 35 U.S.C. §103(a). Therefore, the Applicants respectfully traverse the rejection of claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 in view of the patentability of their respective parent claims, as discussed above.

CONCLUSION

In view of the above, it is respectfully submitted that claims 1-30 are in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of claims 1-30 and to pass this application to issue. Additionally, in an effort to further the prosecution of the subject application, the Applicant kindly invites the Examiner to telephone the Applicant's attorney at (805) 278-8855 if the Examiner has any questions or concerns.

Respectfully submitted,

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